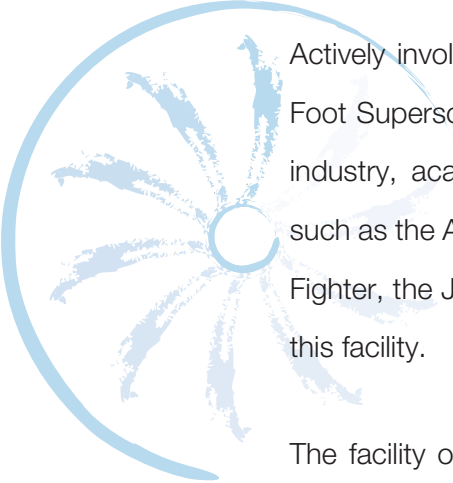


NASA's Aeronautics Test Program

8- by 6-Foot Supersonic Wind Tunnel

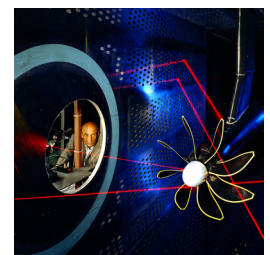
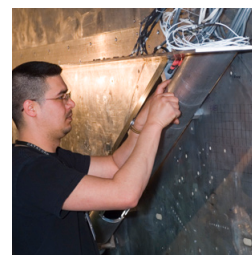


Actively involved in research and development testing for over 50 years, the 8- by 6-Foot Supersonic Wind Tunnel is NASA's only transonic-propulsion wind tunnel, serving industry, academia, and NASA's own community of aerospace researchers. Aircraft such as the Advanced Turboprop, the National AeroSpace Plane, the Advanced Tactical Fighter, the Joint Strike Fighter, and the High-Speed Civil Transport have been tested in this facility.

The facility operates either in an aerodynamic closed-loop cycle, testing aerodynamic performance, or in a propulsion open-loop cycle that tests live fuel-burning engines and models.



From left to right: Photographers shooting a turboprop model, National AeroSpace Plane (NASP) nozzle, Space Shuttle Return-to-Flight cable tray ramp removal test, and SR-7A turboprop.



Facility Benefits

- Supports research testing of advanced aircraft and launch vehicle concepts
- Real-time data acquisition and display in both alphanumeric and graphical format
- Standardized data acquisition systems at all Glenn wind tunnel facilities
- Integrated data acquisition and model actuation system provides for efficient, cost-effective testing
- Aerodynamic and propulsion cycle operating modes
- Model support systems (hydraulics, exhaust, high-pressure air, fuels, etc.)
- Flow visualization systems—Schlieren, oil flow, and pressure-sensitive paint
- Experienced staff of technicians, engineers, researchers, and operators
- When coupled with NASA Glenn's 10- by 10-Foot Supersonic Wind Tunnel, provides aerodynamic and propulsion test capabilities from low-subsonic through high-supersonic Mach range



Facility Applications

- Aircraft and missile development
- Next-generation launch vehicles
- Jet and rocket engines
- Supported programs and projects including the National AeroSpace Plane (NASP), Joint Strike Fighter (JSF), Advanced Ducted Propeller (ADP), space shuttle, Advanced Tactical Fighter, High-Speed Civil Transport, and Orbital Space Plane (OSP)

Characteristics

Test section dimensions	8 ft high by 6 ft wide by 23.5 ft long
Speed	Mach 0 to 0.1 and 0.25 to 2.0
Relative altitude	1000 to 35 000 ft
Reynolds number	3.6 to 4.8×10^6 per ft
Temperature	520 to 720 °R
Dynamic pressure	200 to 1340 psf
Stagnation pressure	15.3 to 25 psia
Fuels	Gaseous hydrogen

Instrumentation

Pressure measurement Electronically scanned pressure (ESP) system	384 ports
Temperature measurement Thermocouples	48 (type J, T, or E)
Flow visualization	Schlieren system, sheet laser, pressure-sensitive paint, and high-speed video
Test article controls	Digital model control system with graphical interface and automated test article sequencing system

Data Acquisition and Processing

Steady state ESCORT	Real-time online analog signals, conversion of Neff data to engineering units, calculations displayed in tabular or graphical format, and 1-s update rate
Dynamic Multichannel high-speed digitized acquisition	Precision filter amplifiers with elliptical (132 dB/oct) or linear phase (46 dB/oct) anti-aliasing filters (132 dB/oct); offloading data by FTPing in near real time for postprocessing; 16-bit A/D per channel; and throughput of 40 million samples per second
Remote access control room	Real-time remote access to data, video conferencing in real time, workstations supplied for remote site, and secure network connections provided

Contact Information

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